

(12) UK Patent Application (19) GB (11) 2 218 081 (13) A

(43) Date of publication 08.11.1989

(21) Application No 8808899.2

(22) Date of filing 15.04.1988

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(51) INT CL^A

G07F 17/00 7/10

(52) UK CL (Edition J)

B8U UAG U500

U1S S1804 S1869

(56) Documents cited

EP 0068642 A2 EP 0060643 A2 US 4300040 A

(58) Field of search

UK CL (Edition J) B8U

INT CL^A G07F

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(54) A dispensing machine

(57) A dispensing machine for audio or video cassettes is arranged to transmit sound or display an image, characteristic of information on a given cassette on request. A prospective customer may thereby have a preview of a cassette which he is interested in buying or renting. The machine may have means to detect the presence of a passer-by and display attention-gaining material in response thereto. The machine may be connected by telephone to a central stock control operation or to the police or a security firm in case of tampering.

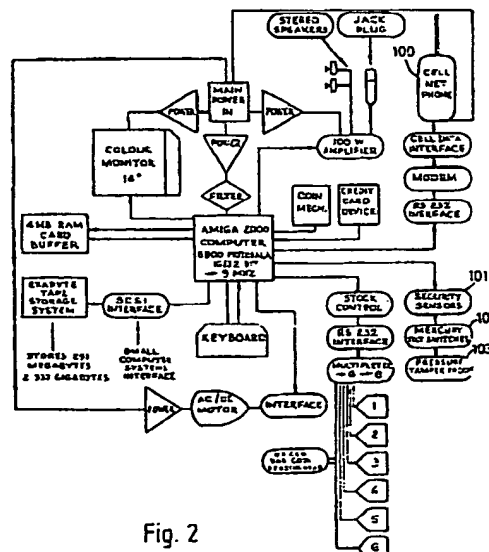


Fig. 2

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

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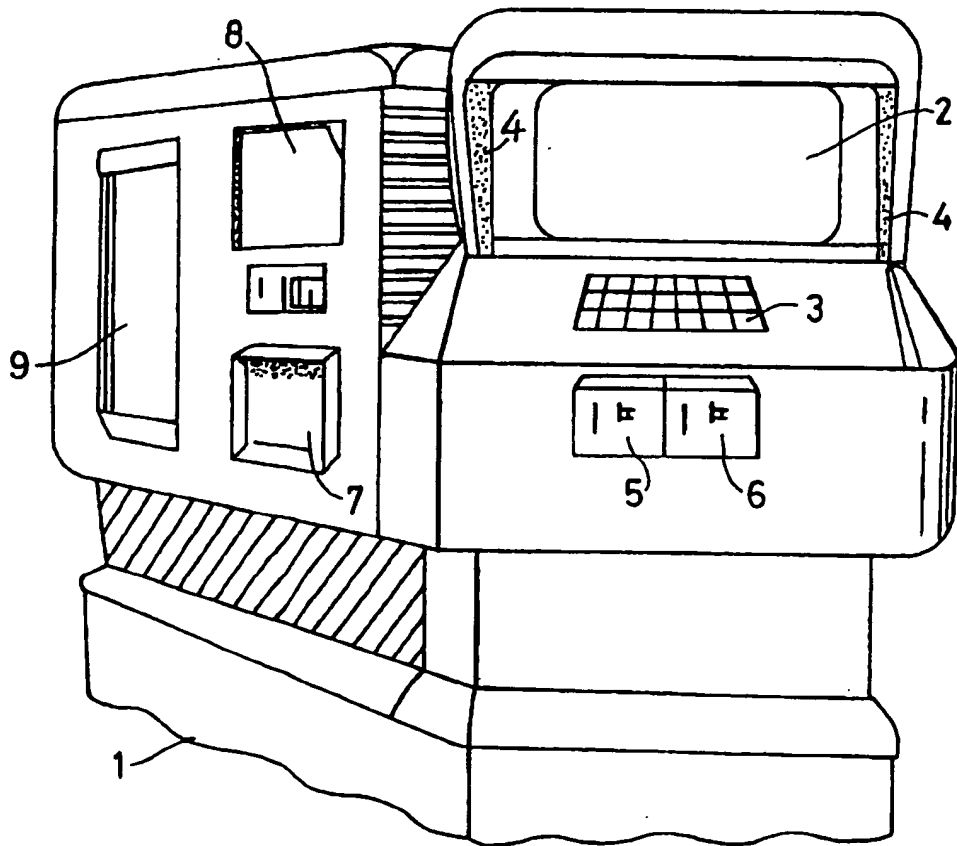


Fig. 1

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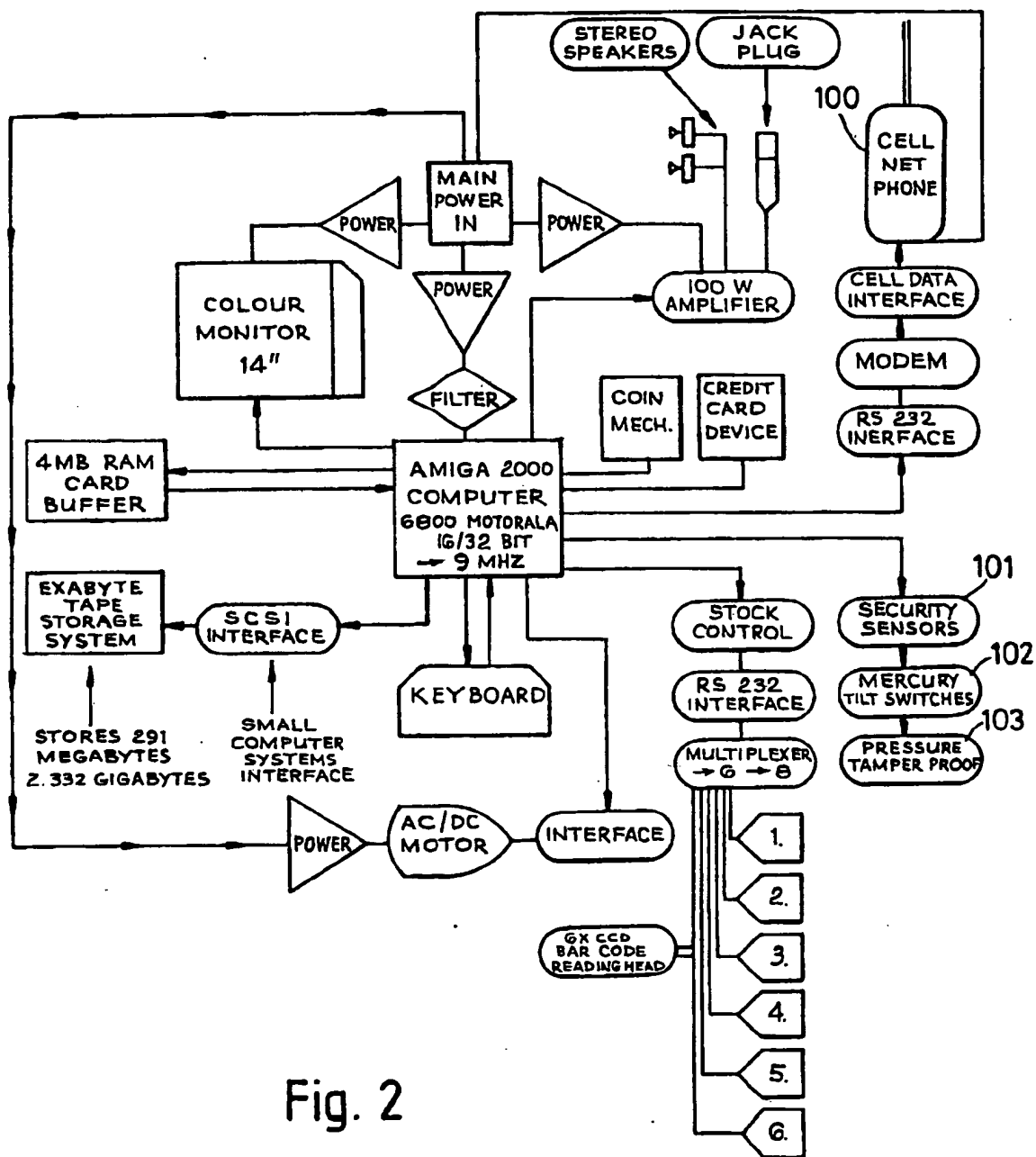


Fig. 2

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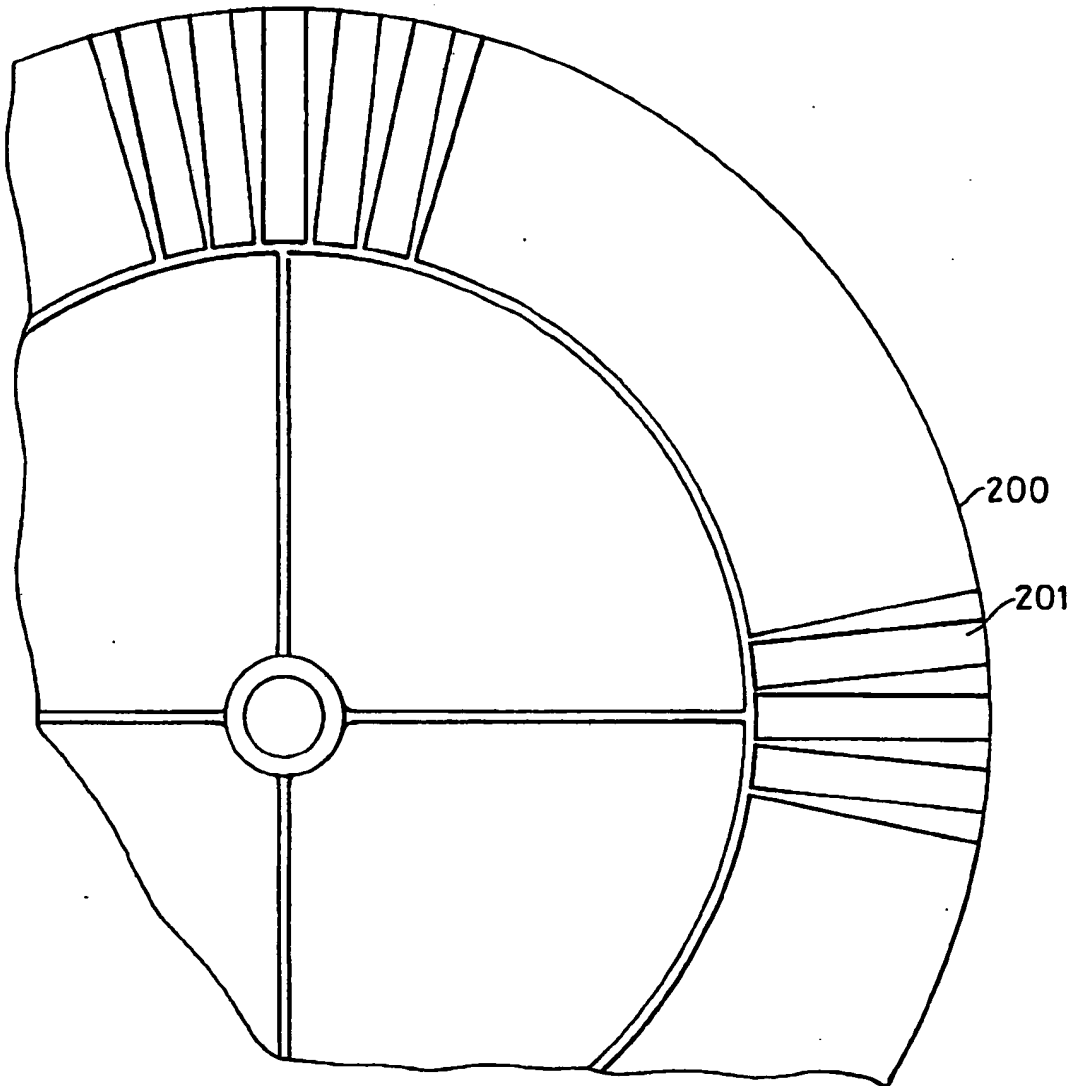


Fig. 3

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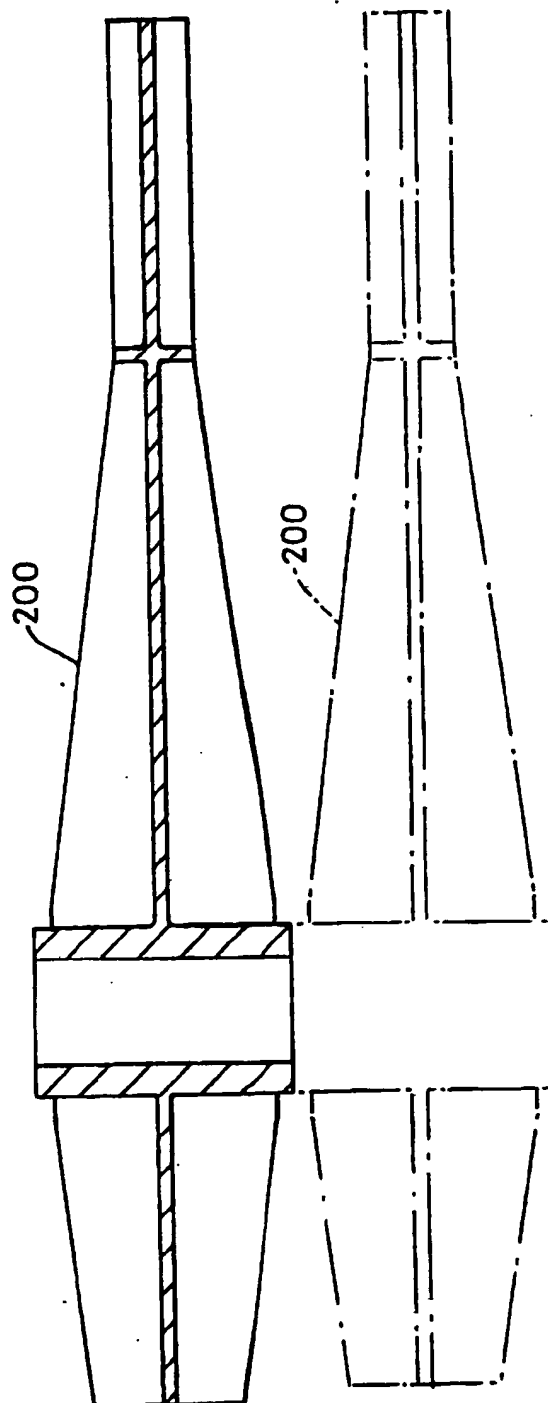


Fig. 4

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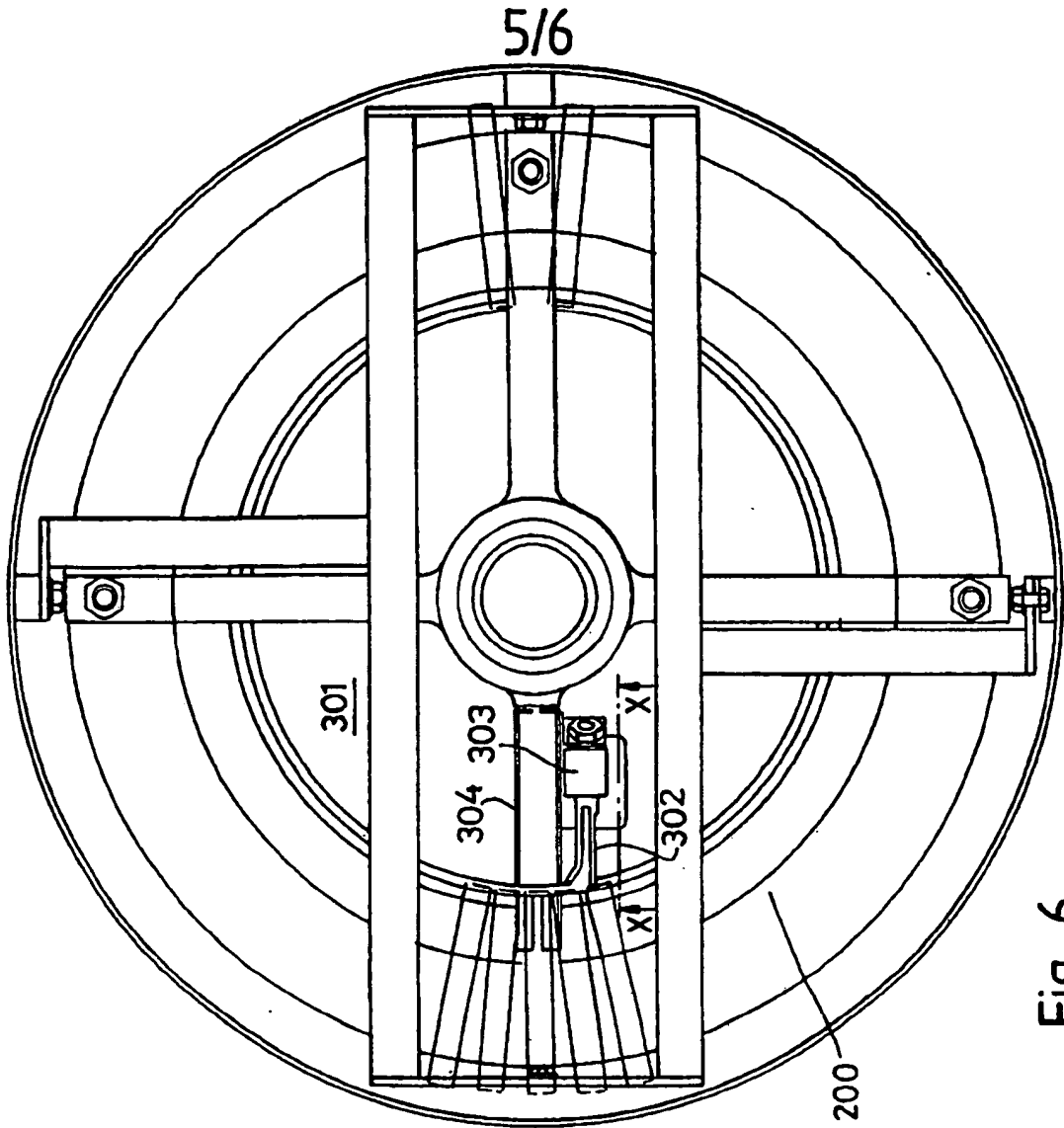


Fig. 6

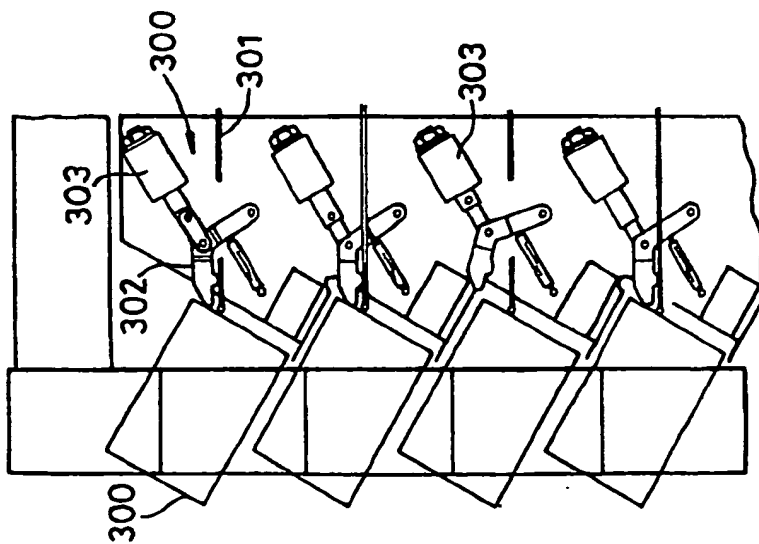
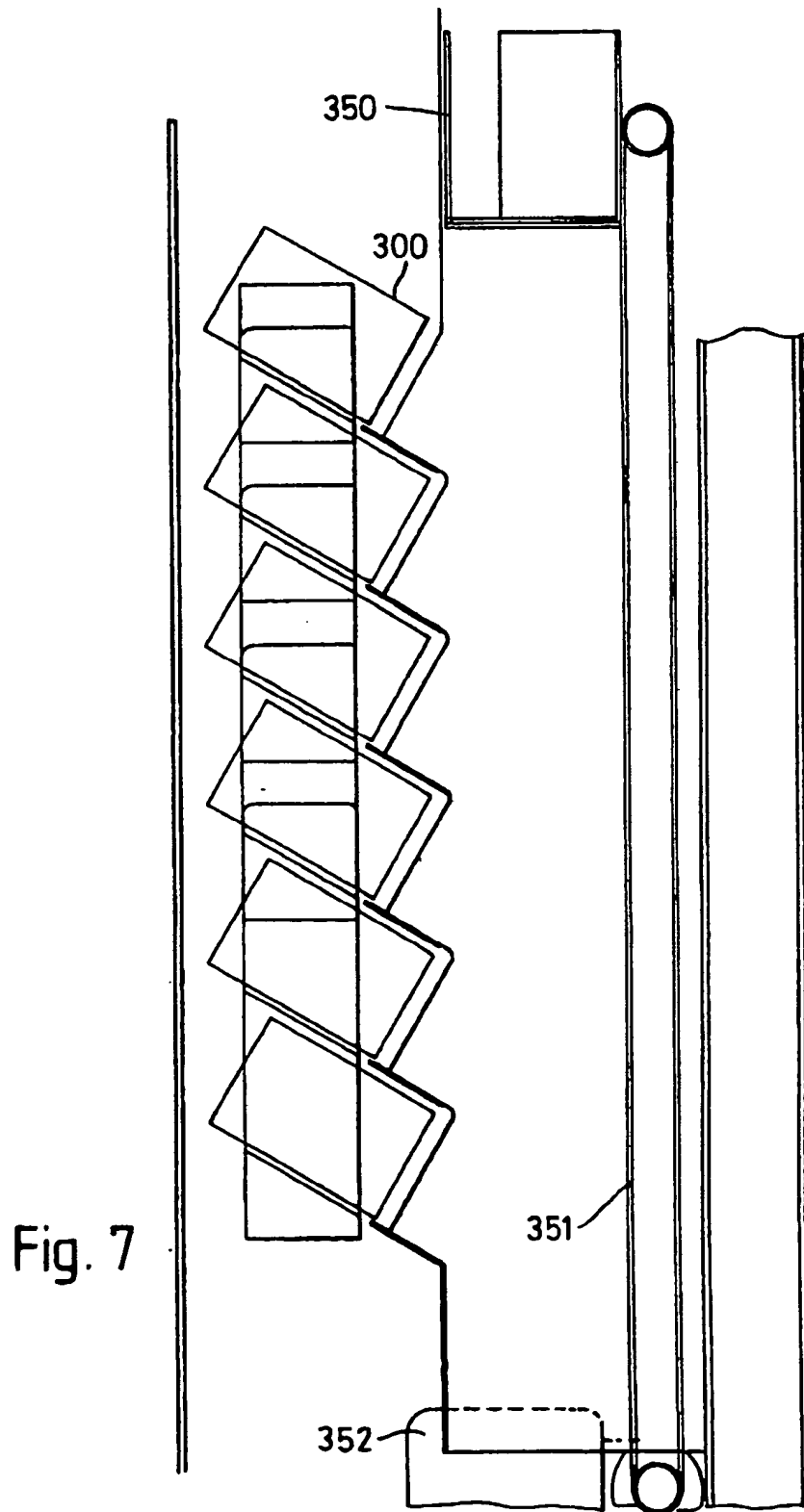


Fig. 5

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A DISPENSING MACHINE

The present invention relates to a dispensing machine.

Many different sorts of dispensing machines are known and are used to dispense newspapers, books, drinks or edible snacks. Commonly, such machines require the input of cash or a credit card or the like, in which case the machine is normally known as a vending machine. In other situations, the contents of the machine may be dispensed freely. Dispensing machines may simply list the available products, there being an appropriate button next to each item on the list so that the prospective recipient of the item can select a desired one. Alternatively, there may be a code number against each item which is entered in by the prospective recipient. A variation of either of these arrangements is for a picture of the item to be displayed, rather than its name.

It is known to provide a vending machine for video cassette tapes in which information concerning the tapes, particularly a picture of the cover of the tape, is displayed at the front of the machine alongside a code number which is then entered by the prospective recipient. It is known for there to be a brief written exposition of the contents of the film as well as a picture of the physical cover.

The present invention provides a dispensing machine for a plurality of cassettes (as herein defined) carrying respective stored auditory or visual information wherein the machine is adapted to transmit sound or an image characteristic of the information on any given such cassette in response to an instruction from a prospective recipient of the cassette.

The term "cassette" is used herein to encompass conventional audio cassettes, digital audio cassettes, video cassette tapes, compact discs and any other existing or future such medium for stored auditory or visual information.

The sound which is transmitted by the machine may be broadcast through loudspeakers, preferably arranged so as to give a stereo illusion at the position where the prospective recipient will stand, or through a headphone plug socket. In some situations, it may be undesirable for the sound to be broadcast through loudspeakers and therefore the provision of headphones on the machine may be appropriate. In many such situations, however, such headphones would be damaged or stolen and an alternative is for the machine simply to have an appropriate socket for the prospective recipient to insert his own headphones, such as those which are common in connection with portable, so-called "personal", radios and cassette players. The machine can be provided with more than one such socket, so that different sorts of plug can be inserted.

The image or images transmitted by the machine are preferably displayed on an electronic screen of the sort commonly referred to as a "visual display unit", although in a much less sophisticated embodiment a printed web of material is scrolled in front of a window. The image may be static or moving, but is preferably moving, and may comprise graphics associated with the information stored on the cassette or it may comprise one or more extracts of that information, if the said information is visual. Written information may be displayed, for example reviews of the information on the cassettes extracted from appropriate magazines.

The machine acts as a "silent salesman" and is intended not only to dispense its contents to those who know they wish to purchase them, but also to attract

possible buyers and to encourage them to make a purchase. In one particular embodiment having this aim in mind, the machine comprises a proximity detector, for example a heat detector, which identifies when a human body is passing within a certain range and transmits attention-gaining images or sound analogous to the transmissions described above.

As discussed above, the dispensing machine may dispense freely but it would be more usual for it to be a vending machine requiring the input of cash or the debiting of some form of electronically-readable direct debit or credit card.

The cassettes may be stored in any convenient manner, but are preferably stored on one or more carousels. In one embodiment, each location in the carousel is coded so that the machine can sense the contents of that location and can therefore dispense the correct cassette when the prospective recipient orders that item. However, it is much simpler for the individual cassettes to be coded so that they may be placed at any suitable location on the carousels. Thus, each cassette may be placed in a cardboard or plastic sleeve carrying some form of machine-readable code, such as a bar code which may be read by an infrared or laser detector or a coded magnetic strip. When new stock is placed in the machine, the machine may then automatically undertake a stocktaking routine in which the location and identity of each cassette on the carousel are noted. Alternatively, but less efficiently, the machine may simply scan through the stock of cassettes when each instruction is given.

In one embodiment, following a selection instruction from the prospective recipient, the relevant carousel is rotated until the desired cassette is aligned with an arm which then plucks or knocks the cassette from its location on the carousel, or simply allows it to fall, and deposits it into a chute. The chute may discharge

directly into an opening in the exterior of the machine from which the user can remove it, or a conveyor belt may carry the cassette up to an opening nearer to the top of the machine.

The machine may be mounted in any convenient manner. For example, the parts of the machine which need to be seen by and accessible to the prospective recipient may be mounted on top of a counter, with the remaining parts of the machine hidden inside the counter. Alternatively, the machine may be a self-contained unit for convenient location in a shop, public house, club, shopping arcade or railway station concourse.

The essence of the machine is that the prospective recipient is able to receive information specifically tailored to his prospective purchase. Thus, the machine in its resting state may display simply a list of titles, with or without other static information. The user then enters a code corresponding to the item in which he is interested and the machine then transmits that specifically tailored sound or image. After a predetermined period, the transmission is ended and the user is given the opportunity to select that item for dispensing or to reject it.

It is advantageous for there then to be a visual display asking the user to confirm that the item is what he wants, and then the machine dispenses the cassette in question.

A preferred embodiment of the invention will now be described by way of example and with reference to the accompanying drawings, in which:-

Figure 1 is a perspective view of the upper portion of a machine in accordance with the invention;

Figure 2 is a block diagram of an electronic and electromechanical circuit forming part of the machine;

Figure 3 is a plan view of part of a carousel forming part of the machine;

Figure 4 is a part view of a diametrical vertical section through the carousel of Figure 3;

Figure 5 is a schematic elevation along line X-X in Figure 6 of a part of the machine showing cassettes on several stacked carousels and the operation of a cassette-removing arm;

Figure 6 is a plan view of a carousel in place in the dispensing machine; and

Figure 7 is a schematic part elevation similar to Figure 5 but showing a cassette elevator.

Referring first to Figure 1, the machine is shown as being mounted on a heavy base 1, only part of which is visible in the drawing. The machine comprises a high profile monitor or visual display unit 2 which is adapted to display changing information for the user. There is a keyboard 3 which is operated by the user in order to scroll through a menu of items for selection or simply to instruct a predetermined display sequence to begin. The user then uses the keyboard to select the item on the menu in respect of which he wishes to receive the sound or image. Such images are displayed on the high profile monitor 2 and any sound is transmitted via stereo speakers 4, these being so placed as to provide a stereo illusion at the point at which the user is likely to be standing. At the end of the transmission, an invitation appears on the high profile monitor 2 for the user to select or reject the item. If he selects it, he must then insert an appropriate amount of money into the coin mechanism 5 or must insert a card into a reader 6 for a credit card or the like. The cassette will then be selected from the carousels in a manner to be described below and placed into the tape dispatch slot 7, from which the user can remove it.

A second monitor or visual display unit 8 is provided at the side of the machine to attract prospective users who are to that side of the machine. As

an optional feature, there is alongside the second monitor 8 a glass panel 9 through which the mechanism of the machine can be viewed.

Figure 2 is a block diagram of the electronics used in this embodiment of the machine. This diagram is largely self-explanatory and will not be described in detail. The various items referred to are all commercially available. For example, the heart of the machine can conveniently be the Commodore 2000 computer embodying a 68000 Motorola 16/32 bit processor. A suitable coin mechanism can be obtained from NEO Electronics Ltd, Oldham, Lancashire under the name "COINMASTER". A suitable reader for a credit card is available as part No. CT460-1A from Roxburgh Electronics Ltd., Rye, East Sussex. The Exabyte tape storage system is available from the Exabyte Corporation under the trade designation EXB-8200.

It is to be noted that this embodiment comprises a "Cellnet" telephone link 100 through which the machine can communicate with the outside world, for example to relay sales information to a central stock control operation, or to alert the police or a security firm to the fact that the machine is being tampered with or physically moved. The information concerning such tampering or movement is derived from security sensors 101, tilt switches 102, pressure detectors 103 and the like.

Figure 3 is a plan view of a carousel 200 suitable for storing the cassettes, and Figure 4 is a vertical diametrical section therethrough. It can be seen that, in this embodiment, the carousel 200 has locations for sixty cassettes. There may be as many carousels in the machine as is physically convenient but a vertical stack of up to six is usually suitable. Clearly, several such stacks can be located adjacent one another.

Figure 5 illustrates schematically a section through four stacked carousels 200. Each cassette 300 is arranged on a slope and is retained in position by a disc 301 except at the delivery point where a movable arm 302 holds it in position. The arm may be withdrawn by actuation of a solenoid 303, as is illustrated in the third carousel down, thereby allowing the cassette 300 to fall to the bottom of the machine. The solenoid 303 may be of the sort available from Maplin Electronics Ltd., under the trade designation YR89W. A bar code reader 304 is associated with the solenoid-operated arm and reads the cassette at the delivery position. A suitable bar-code reader is available from Codeway Ltd. Colchester, Essex under the trade designation Richo T.S2. Referring finally to Figure 7, it can be seen that the cassette 300 will fall into a cassette elevator hopper 350 which is attached to a timing belt, chain or leadscrew and ballnut cassette elevator 351 which is powered by an electric gear and motor drive such as is available from Small Electric Motors Ltd., London under the trade designation SEM 1A. The hopper 350 is then raised so as to become accessible through the tape dispatch slot 7.

When several stacks of carousels are placed side by side, a common conveyor belt may collect the cassettes removed therefrom.

CLAIMS

1. A dispensing machine for a plurality of cassettes carrying respective stored auditory or visual information wherein the machine is adapted to transmit sound or an image characteristic of the information on any given such cassette in response to an instruction from a prospective recipient of the cassette.
2. A dispensing machine according to Claim 1 wherein the said sound is broadcast through loudspeakers or transmitted electronically through a headphone plug socket.
3. A machine according to Claim 1 or 2 wherein the said image or images transmitted by the machine are displayed on an electronic screen or on a printed web of material adapted to be scrolled in front of a window.
4. A machine according to Claim 3 wherein the image is moving and comprises graphics associated with the information stored on the cassette or one or more extracts of that information.
5. A machine according to Claim 3 or 4 wherein reviews of the information on the cassettes are displayed.
6. A machine according to any one of the preceding claims comprising a proximity detector which identifies when a human body is passing within a certain range of the machine and transmits attention-gaining images or sound analogous to the said sound or image transmissions.
7. A machine according to any one of the preceding claims wherein the machine is a vending machine requiring the input of cash or the debiting of an electronically-readable direct debit or credit card.
8. A machine according to any one of the preceding claims wherein the cassettes are stored on one or more carousels.

9. A machine according to Claim 8 wherein each location in the carousel is coded so that the machine is adapted to sense the contents of that location and to dispense the correct cassette when the prospective recipient orders that cassette.

10. A machine according to Claim 8 wherein each said cassette is coded so that it may be placed at any suitable location on the carousels and the machine has means to read the codes and thereby identify the location of a given cassette.

11. A machine according to any one of Claims 8 to 10 wherein, following a selection instruction from the prospective recipient, the relevant carousel is rotated until the desired cassette is aligned with an arm which causes the cassette to be removed from the carousel and to be deposited into a chute.

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